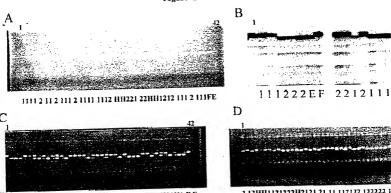
# ALIELE1: 214 AACGGBAACA<u>egaGaaGaaGaaGGGAa</u>GGACCTTGTTCAAAGCAACGGGGAACTTTAGAGCCTGGGGGGGCGTGGG ALIELE2: 226 AACGGBAAC---AGAGAGAAGAGAAGGAAGCTTGTTCAAAGCBACGGGGGGACACTTTAGAGCCCTGGGGGGGGTGGG ALIELE1: 62 AACGATAATATAATATAAGAAAAAGAC-ACACTITGAGGGCATTTTTGACTTGAGAAACAAACGTAA ALIELE2: 14 AACGATAATATAATATTATAAGAAAAAGAC-CACTITGAGGGGATTTTGACTGAGAGAACTCAAGTATCAATCTAA ALIELE2: 299 GGTCAATBAGGGTBACCTGGGTGAAGAGAGCCTCGGGGG-CGTCGTTGCTGAAGAAGAAGAAGAAGAG-CGAAA ALLELE1: 1 TTARARACCTTGCGTGTGATCGGTATTACAGTACGCAGGGCCA-------ATCAACTAAAATA-TGTGCA ALLELE1: 365 CCAAGAGAAACTCCTCGGAAGGAACGGGAATTC 397 $E_{\rm CCG}M_{\rm AAC}405$ $E_{CTA}M_{AGG}113$ ALLELE2: 1 ALLELE 1: 74 ALLELE 2: 61 ALLELE 2: 1 Figure 1

	$E_{CGG}M_{GA}116$ aleele 1: 1 apattcoggitaictcagacaactitigtiil	ALLELE 1: 60 COAGGCTITGAGAGGCATAGAAATAATTTTTTTTATATAAAAAAGTCTCTTTAA ALLELE 2: 60 COAGGCTITGAGAGGCATAGAAATATTTTTTTATATA-AAAAAAAAAA	$E_{A'C}M_{CGA}87$ albebeen the structure of the structu	Allele 1: 68 CTGATAACCGTGGTGGTTAA 87 	$\mathbf{E_{CCC}}$ $\mathbf{M_{ATG}}$ 1 transgaratarataratarataratarataratarataratara	ALLELE1: 61 TITITITATIGABABARICGACCCAAGITGAAACACATGTITGAAGAATIGTITIGT 116 	ALIBER: 117 GCATCCARGCTTTTTCTTGTACARTCAGTGTGAGAGGGGAATTC 161	EccaMaccii4 alese: 1 gaattcccagec-rgattfornicaacgtgtattgtccacaaaatgttcaagcatctta 59 alese: 1 [	ALLELE1: 60 GGGAACTGCTATTCTTACTTCTAATTTTTATTGACATCCAAAGTGTGCTTTAA 114 ALLELE2: 60 GGGAACTGCTATTCTTACTTCTAATTTTTATTGACATCCAAGTGTGCTTTAA 114
--	---	--	---	--	---	---	--	--	--

# b. $E_{\rm ATG}M_{\rm CGA}87~BAC$ extension and TaqMan probe and primers

	++atcatccaaaattaaaattgaaaactttaatacaaatgcacattttggagccarucatguc
Allere 1.	
Allele 2:	ttatcatccaaaattaaaaattgaaaacttaacacacaaaagamaagam
	TMASE
Allele 1:	atotottggtottgagtottatcatureyeysweet
Allele 2:	atctcttggtctgagtcttatcatcatcssssssssssss
Allele 1:	
Allele 2:	



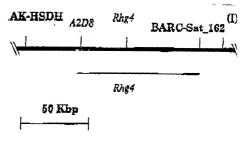


Figure 4

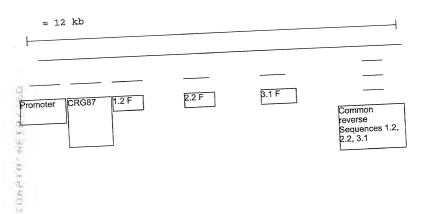
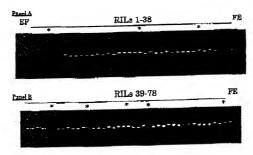


Figure 5 Call: No Amp N P M Q Q Dye Components 61 62 61/2 8 No OR Panel A 12:00 8.00 4.00 0.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00 18.00 4.00 2.00 0.00 2.00 Atlete 1 ♦ Plate ♥ Teay No Amp No Amp No Amp Panel B



### Figure 7A

Synthetic rhg1 gene

AATGGGAGGAGTGGGAAAGACAGTGGCTATGGAGCTTGTTCCGGAGGTTGGGATTGGAAT CAAGTGTGCTCAGGGACAGGTTATTGTGATCCAGCTTCCTTGGAAGGGTTTGAGGGGTC GAATCACCGACAAAATTGGCCAACTTCAAGGCCTCAGGAAGCTTAGTCTTCATGATAAC CAAATTGGTGGTTCAATCCCTTCAACTTTGGGACTTCTTCCCAACCTTAGAGGGGTTCA TCAAGTCTCTTGACCTCAGCAACAACTTGCTCACAGGAGCAATCCCTTATAGTCTTGCT AATTCCACTAAGCTTTATTGGCTTAACTTGAGTTTCAACTCCTTCTCTGGTCCTTTACC CTGGCTCCCTTCCTAACTCTTGGGGTGGGAATTCCAAGAATGGCTTCTTTAGGCTTCAA AATTTGATCCTAGATCATAACTTTTTCACTGGTGACGTTCCTGCTTCTTTGGGTAGCTT AAGAGAGCTCAATGAGATTTCCCTTAGTCATAATAAGTTTAGTGGAGCTATACCAAATG AAATAGGAACCCTTTCTAGGCTTAAGACACTTGACATTTCTAATAATGCCTTGAATGGG AACTTGCCTGCTACCCTCTCTAATTTATCCTCACTTACACTGCTGAATGCAGAGAACAA TTTTGAGTAGAAACCAATTTAGTGGACATATTCCTTCAAGCATTGCAAACATTTCCTCG CAGTCAGCGCAGTC TAAAT CTC TTCA A TGTTTCCTACAATAGCCTCTCAGGTTCTGTCCCCCCTCTGCCTGCCAAGAAATTTAACTCAAGCTCATTTGTGGGAAATATTCAACTATGT GGGTACAGCCCTTCAACCCCATGTCTTTCCCAAGCTCCATCACAAGGAGTCATTGCCCC ACCTCCTGAAGTGTCAAAACATCACCATCATAGGAAGCTAAGCACCAAAGACATAATTC TCATAGTAGCAGGAGTTCTCCTCGTAGTCCTGATTATACTTTGTTGTGTCCTGCTTTTC TGCCTGATCAGAAAGAGATCAACATCTAGGCCGGGAACGGCCAAGCCACCCGAGGGTAG AGCGGCCACTATGAGGACAGAAAAAGGAGTCCCTCCAGTTGCTGGTGGTGATGTTGAAG CAGGTGGGGAGGCTGGAGGGAAACTAGTCCATTTTGATGGACCAATGGCTTTTACAGCT GATGATCTCTTGTGTGCAACAGCTGAGATCATGGGAAAGAGCACCTATGGAACTGTTTA TAAGGCTATTTTGGAGGATGGAAGTCAAGTTGCAGTAAAGAGATTGAGGGAAAAGATCA CTAAAGGTCATAGAGAATTTGAATCAGAAGTCAGTGTTCTAGGAAAAATTAGACACCCC AATGTTTTGGCTCTGAGGGCCTATTACTTGGGACCCAAAGGGGAAAAGCTTCTGGGTTT TGATACATGTCTAAAGGAAGTCTTGCTTCTTTCCTACATGGAAGGTTCGTGTGCTGGTT CTTTCATTAAAGTGTTGTGTGTGCTGGTCTTTAATTATAATTTGGAGTTTTACCTTAGT AATCTGTATAATTCTAATCGGAGAACAGTACAAACAAAAACACCTAAGGAACAACACCT TANCTTTAATATACCATATCAATAAAGTGAAATATTTTCTTGGTCATCTTGATGCAGGG GGAACTGAACATTCATTATTGGCCACAAGATTAAAATAGCCCAAGCCTTGGCCCGGGCT TGTTTGCCTTCATTCCCAGGAGAACATCATACATGGGACCTCNCATCCAGCAATGTGTG GCTTGATGAAAAACAAATGCTAAAATTCAGATTTTGGTCTTTTTCGGGTTGATGTCAAC TGCTGCTAATTCCAACGTGATAGCTACAGCTGGAGCATTGGATACCGGGCACCTGAGCT CTCAAAGCTCAAGAAAGCAAACACTAAAACTGATATCTACAGTCTTGGTGTTATCTTGT TAGAACTCCTAACGAGGAAATCACCTGGGGTGTCTATGAATGGACTAGATTTGCCTCAG TGGGTTGCCTCAGTTGTCAAAGAGGAGTGGACAAATGAGGTTTTTGATGCAGACTTGAT GAGAGATGCATCCACAGTTGGCGACGAGTTGCTAAACACGTTGAAGCTCGCTTTGCACT GTGTTGATCCTTCTCCATCAGCACGACCAGAAGTTCATCAAGTTCTCCAGCAGCTGAAG **AG**ATTAGACCAGAGAGATCAGTCACAGCCAGTCCCGGGGACGATATCGTATAGCACAAA 

### Figure 7B

3105bp

Rhg1 Peptide
NGRSGKDSGYGACSGGWVGIKCAQGQVIVIQLPWKGLRGRIT
DKIGOLOGLRKLSLHDNOIGGSIPSTLGLLPNLRGVQLFNNRLG

SIP

LSLGFCPLLQSLDLSNNLLTGAIP

YSLANSTKLYWLNLSFNSFSGPLP

**ASLTHSFSLTFLSLONNNLSGSLPNSWGG** 

NSKNGFFRLQNLILDHNFFTGDVP

ASLGSLRELNEISLSHNKFSGAIP

NEIGTLSRLKTLDISNNALNGNLP

ATLSNLSSLTLLNAENNLLDNQIP

OSLGRLRNLSVLILSRNQFSGHIP

SSIANISSLRQLDLSLNNFSGEIP

VSFDSQRSLNLSNVSYNSLSGSVP

PLLAKKFNSSSFVGNIQ**L**C**G**YS**P** STPCLSO

APSOGVIAPPPEVSKHHHHR

## KLSTKDIILIVAGVLLVVLIILCCVLLFCLIRKRS

TSKAGNGQATEGRAATMRTEKGVPPVAGGDVEAGGEAGGKLVHF DGPMAFTADDLLCATAEIMGKSTYGTVYKAILEDGSQVAVKRLR EKITKGHREFESEVSVLGKIRHPNGLALRAYYLGPKGEKLLVFD YMSKGGLLLFYMEGSCAGSFIKVLCVLVFNYNLEFYLSNLYNSN RRTVOTKTPKEQHLXFNIPYQ

-SEIFSWSS-CRGN-TFIIGHKMKIXQDLAVACSPSFPETSYMD LXSSNVCX-NXMLKLQFWSFSVDVNCC-FQRDSYSWSIGIPGT-ALKAQESKH-N-YLQSWCYLVRTPNEEITWGVYEWTRFASVGCL SCQRGVDK-GF-CRLDERCIHSWRRVAKHVEARFALC-SFSIS TTRSSSSPAAGRD-TREISHSOSHLPGRPLEPYSESY

# Figure 7D

	Score	E
Sequences producing significant alignments:	(bits)	Value
pir:T46070 hypothetical protein T18N14.120 - Arabidopsis thaliana	632	e-180
pir:T47727 hypothetical protein F18021.60 - Arabidopsis thaliana	344	1e-95
pir:T04587 hypothetical protein F23E13.70 - Arabidopsis thaliana	268	9e-71
pir:T49038 hypothetical protein T5P19.20 - Arabidopsis thaliana	257	2e-67
pir:T48210 hypothetical protein T20L15.160 - Arabidopsis thaliana	241	1e-62
pir: T05050 protein kinase homolog M3E9.30 - Arabidopsis thaliana	238	2e-61
pir: T18536 receptor-like protein kinase - Ipomoea nil (Japanese	236	3e-61
pir: T48489 receptor-like protein kinase - Arabidopsis thaliana	236	5e-61
pir:T10515 disease resistance protein Cf-2.2 - currant tomato	235	6e-61
pir: T10504 disease resistance protein Cf-2.1 - currant tomato	235	6e-61
pir:T30553 disease resistance protein Hcr2-5D - tomato	229	4e-59
pir:S27756 receptor-like protein kinase 5 (EC 2.7.1) precurso	227	le-58
pir.T48499 receptor-like protein kinase-like protein - Arabidop	226	3e-58
pir: T46033 receptor protein kinase-like protein - Arabidopsis t	226	4e-58
pir: T05335 hypothetical protein F1C12.190 - Arabidopsis thaliana	221	1e-56
pir:T10636 hypothetical protein T13K14.100 - Arabidopsis thaliana	219	7e-56
pir:T05898 hypothetical protein F6H11.170 - Arabidopsis thaliana	218	1e-55
pir:T45717 receptor-kinase like protein - Arabidopsis thaliana	212	7e-54
pir: T05322 hypothetical protein F18F4.240 - Arabidopsis thaliana	211	1e-53
pir:T10659 probable serine/threonine-specific protein kinase (E	211	2e-53
pir:T03784 probable receptor protein kinase - rice	208	1e-52
pir:T50851 receptor protein kinase homolog [imported] - soybean	201	1e-50
pir: T45647 receptor protein kinase-like protein - Arabidopsis t		5e-50
pir:T45718 receptor-kinase like protein - Arabidopsis thaliana	199	7e-50
pir:T50850 receptor protein kinase homolog [imported] - soybean	199	7e-50
pir: T45645 receptor kinase-like protein - Arabidopsis thaliana	196	3e-49
pir: T09356 brassinosteroid-insensitive protein BRI1 - Arabidops	196	3e-49
pir:T00712 protein kinase homolog F22013.7 - Arabidopsis thaliana	190	2e-47
pir: A57676 protein kinase Xa21 (EC 2.7.1), receptor type prec	190	3e-47
pir:S39476 kinase-like transmembrane protein TMKL1 precursor	188	1e-46
pir:T02154 protein kinase homolog T1F15.2 - Arabidopsis thaliana	188	1e-46
pir:T10725 protein kinase Xa21 (EC 2.7.1) Al, receptor type	186	5e-46
pir: T05897 protein kinase homolog F6H11.160 - Arabidopsis thaliana		1e-45
pir: T04313 protein kinase Xa21 (EC 2.7.1), receptor type - rice	183	3e-45
pir:T10727 protein kinase Xa21 (EC 2.7.1) D, receptor type	181	2e-44

### Figure 7E

>pir: T46070 hypothetical protein T18N14.120 - Arabidopsis thaliana Length = 836

Score = 632 bits (1613), Expect = e-180Identities = 329/550 (59%), Positives = 400/550 (71%), Gaps = 2/550 (0%) Prame = +1

- Query: 7 RSGKDSGYGACSGGWVGIKCAQGQVIVIQLPWKGLRGRITDKIGQLQGLRKLSLHDNQIG 186 +S +S GW GIKC +GOV+ IOLPWKGL G I++KIGQL LRKLSLH+N I
- Sbjct: 72 KSWNNSASSQVCSGWAGIKCLRGQVVAIQLPWKGLGGTISEKIGQLGSLRKLSLHNNVIA 131
- Query: 187 GSIPSTLGLLPNLRGVQLFNNRLTGSIPLSLGFCLCFKSLDLSNNLLTGAIPYSLANSTK 366

- Query: 367 LYWLNLSFNSFSGPLPASLTHSFSLTFLSLQNNNLSGSLPNSWGGNSKNGFFRLQNLILD 546 LY LNLSFNS SGPLP S+ S+LTFL LQ+NNLSGS+P+ + NG L+ L LD
- Sbjct: 192 LYRLNLSFNSLSGPLPVSVARSYTLTFLDLQHNNLSGSIPDFF----VNGSHPLKTLNLD 247
- Query: 547 HNFFTGDVPASLGSLRELNEISLSHNKFSGAIPNEIGTLSRLKTLDISNNALNGNLPATL 726
- HN F+G VP SL L E+S+SHN+ SG+IP E G L L++LD S N++NG +P +
  Sbjct: 248 HNRFSGAVPVSLCKHSLLEEVSISHNQLSGSIPRECGGLPHLQSLDFSYNSINGTIPDSF 307
- Query: 727 SNLSSLTLLNAENNLLDNQIPQSLGRLRNLSVLILSRNQFSGHIPSSIANISSLRQLDLS 906 SNLSSL LN E+N L IP ++ RL NL+ L RN+ +G IP +I NIS +++LDLS
- Sbjct: 308 SNLSSLVSLNLESNHLKGPIPDAIDRLHNLTELNLKRNKINGPIPETIGNISGIKKLDLS 367
- Query: 907 LNNFSGEIPVSFDSQRSLNLFNVSYNSLSGSVPPLLAKKFNSSSFVGNIQLCGYSPSTPC 1086
- NNF+G IP+S L+ FNVSYN+LSG VPP+L+KKFNSSSF+GNIQLCGYS S PC
  Sbjct: 368 ENNFTGPIPLSLVHLAKLSSFNVSYNTLSGPVPPVLSKKFNSSSFLGNIQLCGYSSSNPC 427
- Query: 1087 LSQAPSQGVIAPP--PEVSKHHHHRKLSTKDIILIVAGVLLVVLIILCCVLLFCLIRKRS 1260
- + + P + + HHHRKLS KD+ILI G LL +L++LCC+LL CLI+KR+
  Sbjct: 428 PAPDHHPLTLSPTSSQEPRKHHRKLSVKDVILIAIGALLAILLLLCCILLCCLIKKRA 487
- Query: 1261 TSRPGTAKPPEGRAATMRTEKGVPPVAGGDVEAGGEAGGKLVHFDGPMAFTADDLLCATA 1440
- K +G+ T +EK V G AGGE GGKLVHFDGP FTADDLLCATA
  Sbjct: 488 -----ALKOKDGKDKT--SEKTVSAGVAGTASAGGEMGGKLVHFDGPFVFTADDLLCATA 540
- Ouery: 1441 EIMGKSTYGTVYKAILEDGSQVAVKRLREKITKGHREFESEVSVLGKIRHPNVLALRAYY 1620
- EIMGKSTYGT YKA LEDG++VAVKRLREK TKG +EFE EV+ LGKIRH N+LALRAYY
- Sbjct: 541 EIMGKSTYGTAYKATLEDGNEVAVKRLREKTTKGVKEFEGEVTALGKIRHONLLALRAYY 600
- Query: 1621 LGPKGEKLLGFD 1656 LGPKGEKLL FD
- Sbjct: 601 LGPKGEKLLVFD 612

### Figure 7F

Score = 185 bits (464), Expect = 1e-45 Identities = 93/161 (57%), Positives = 122/161 (75%), Gaps = 3/161 (1%) Frame = +2

Query: 1943 GLVCLHSQENIIHGTSHPAMCGLMKNKC\*NS---DFGLFRVDVNCC\*FQRDSYSWSIGYR 2113
GL LHS EN+1H + ++ ++ N+ D+GL R+ + +++GYR

Sbjct: 647 GLAHLHSNENMIH--ENLTASNILLDEQTNAHIADYGLSRLMTAAAATNVIATAGTLGYR 704

Query: 2114 APELSKLKKANTKTDIYSLGVILLELLTRKSPGVSMNGLDLPQWVASVVKEEWTNEVFDA 2293

APE SK+K A+ KTD+YSLG+I+LELLT KSPG NG+DLPQWVAS+VKEEWTNEVFD Sbjct: 705 APEFSKIKNASAKTDVYSLGIIILELLTGKSPGEPTNGMDLPQWVASIVKEEWTNEVFDL 764

Query: 2294 DLMRDASTVGDELLNTLKLALHCVDPSPSARPEVHQVLQQLKRL 2425 +LMR+ +VGDELLNTLKLALHCVDPSP+ARPE +QV++QL+ +

Sbjct: 765 ELMRETQSVGDELLNTLKLALHCVDPSPAARPEANQVVEQLEEI 808